



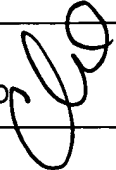
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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/602,612   | 06/25/2003  | Gianfranco Natali    | 2514-1051           | 2481             |
| 466  | 7590        | 05/03/2004           | EXAMINER            |                  |
| YOUNG & THOMPSON<br>745 SOUTH 23RD STREET 2ND FLOOR<br>ARLINGTON, VA 22202 |             |                      | TRIEU, THAI BA      |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 3748                |                  |

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |   |  |
|------------------------------|------------------------|---|--|
| <b>Office Action Summary</b> | <b>Applicati n N .</b> | <b>Applicant(s)</b>   |  |
|                              | 10/602,612             | NATALI, GIANFRANCO  |  |
|                              | <b>Examin r</b>        | <b>Art Unit</b>   |  |
|                              | Thai-Ba Trieu          | 3748  |  |

-- Th MAILING DATE of this c mmunication appears on the c ver sheet with the correspondenc address --

**P riod f r Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Pri rity under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

### **DETAILED ACTION**

The Preliminary Amendment filed on June 25, 2003 is acknowledged. Claims 5-6, 7, 9, and 15 were amended.

#### ***Priority***

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in *Italy* on **July 23, 2002**. It is noted, however, that applicant has not filed a certified copy of the **AR 2002A000027** application as required by 35 U.S.C. 119(b).

#### ***Information Disclosure Statement***

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A (1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

#### ***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of

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**"means for anchoring on th engine"** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

#### **1. IN THE ABSTRACT:**

Applicant is required to delete "said" before "entry signals" on line 9, in the abstract to meet the requirement set forth below.

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, **such as "means" and "said," should be avoided**. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

#### **2. IN THE SPECIFICATION:**

- On Page 5, line 8, ***"pilot point"*** should be replaced by ***--pivot point--***.

- On Page 7, line 25, "**th said solenoid**" should be replaced by **--the solenoid--**.

- On Page 8, line 1, "**pilot point**" should be replaced by **--pivot point--**; and lines 5 and 11, "**solution sensor 7**" should be replaced by **--position sensor 7--**. Additionally, a term to describe the element 7, applicant should elect only one of the following terms maintain the whole specification to be consistent:

- sensor 7 (See page 8, line 4); or
- [[solution]] **position** sensor 7 (See Page 8, lines 5 and 11); or
- control sensor 7 (See Page 10, line 20).

### ***Claim Suggestions***

Applicant is suggested to correct the minor informalities in claims such as:

1. In claim 1:

a. Lines 1-2 should be replaced by following:

-- An electromechanical actuator for [[the regulation of the turbocharger of]] **regulating a turbocharger in** internal combustion engines, characterized by the combination of:--;

b. Line 5, "**the pilot point (4)**" should be replaced by **--a pivot point--**.

c. Line 7, **--and--** should be inserted after "**the solenoid (1);**".

c. Lines 8-13 should be replaced by following:

-- b) an electronic circuit [[which : - on the way in receives]] receiving at least [[the]] **a** signal from the engine's electronic control unit

and [[the]] a retroaction or feedback signal tied to [[the]] a position of the ferromagnetic nucleus (2) in the solenoid (1) on the way in; [[- on the way out it distributes]] distributing the electric current connected to the entry signal on the way out; and [[with which it feeds]] feeding the solenoid (1) for generating the magnetic field.--.

2. Claim 2 should be replaced by the following:

-- The electromechanical actuator, as claimed in claim 1, characterized by [[a]] the solenoid (1) with a coil made of conducting wire sheathed [[and/or]] and treated with appropriate insulating material which makes [[it]] the solenoid appropriate to be used even with high temperatures.-- (for maintaining the consistency in claims and for avoiding a double recitation and 112 2<sup>nd</sup> Paragraph, as being indefinite).

3. Claim 3 should be replaced by following:

-- The electromechanical actuator, as claimed in claim 1, characterized by [[a]] the solenoid combined with a ferromagnetic nucleus (2), with which the rod (3) is connected and through which the [[pilot]] pivot point (4) is activated.-- (for maintaining the consistency and avoiding double recitation in claims, and for correcting typo error).

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4. In claim 4, line 1, "***The actuator***" should be replaced by **-- The electromechanical actuator** – (for maintaining the consistency in claims).

5. Claim 5 should be replaced by following:

-- The **electromechanical** actuator, as claimed in claim 4, characterized by **[[a]] the** position sensor (7) made with a resistor (10), **[[normally]] being** of the linear type.-- ( for maintaining the consistency and avoiding double recitation in claims)

6. Claim 6, should be replaced by following:

-- The **electromechanical** actuator, as claimed in claim 4, characterized by **[[a]] the** position sensor (7) made with a capacitive group.-- ( for maintaining the consistency and avoiding double recitation in claims)

7. Claim 7 should be replaced by following:

-- The **electromechanical** actuator, as claimed in claim 4, characterized by **[[a]] the** position sensor (7) made with a group that measures **[[the]]** inductance of **the** solenoid (1) upon the variation of the position of the ferromagnetic nucleus (2).-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

8. Claim 8 should be replaced by following:

-- The **electromechanical** actuator, as claimed in claim 1, characterized by ~~[[a]]~~ **the** rod (3) tied on one end to the ferromagnetic nucleus (2) and at the other end equipped with ~~[[the]]~~ means for ~~[[its connection]]~~ **connecting** to the ~~[[pilot]]~~ **pivot** point (4) of the turbocharger.-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

9. Claim 9 should be replaced by following:

-- The **electromechanical** actuator, as claimed in claim 1, characterized by ~~[[a]]~~ **the** rod (3) combined with a spring (8) capable of pushing the ferromagnetic nucleus (7) to its resting position.-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

10. Claim 10 should be replaced by following:

-- The **electromechanical** actuator, as claimed in claim 1, characterized by ~~[[an]]~~ **the** electronic circuit constituted by one control part (14) and by one power part (15), from which the solenoid (1) is fed.-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

11. Claim 11 should be replaced by following:

--The **electromechanical** actuator, as claimed in claim 1, characterized by ~~[[an]]~~ **th** electronic circuit constituted by one part (14) with at least two entries, ~~[[from which it receives in one,]]~~ wherein the signal from the engine's



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electronic control unit is received, [[of the ECU type or another equivalent one, in the other one, through]] and wherein the sensor (7), the retroaction or feedback signal is tied to the position of the ferromagnetic nucleus (2) in the solenoid (1).-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

12. Claim 12 should be replaced by following:

-- The electromechanical actuator, as claimed in claim 1, characterized by [[an]] the electronic circuit comprising one control part (14) [[from which,]] wherein the electric current sent to the solenoid (1) is issued and [[which is]] linked to the signals applied to [[its entry]] the entries.-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

13. Claim 13 should be replaced by following:

-- The electromechanical actuator, as claimed in claim 1, characterized by [[an]] the electronic circuit comprising one control part (14) constituted at least by a differential amplifier unit which receives on the way in, the signal from the engine's electronic control unit and the feedback signal coming from the sensor (7) and supplies a current with which the solenoid (1) is guided, through a power amplifier part (15).-- (for maintaining the consistency and avoiding double recitation and lack antecedent basis in claims).

14. Claim 14 should be replaced by following:

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--The electromechanical actuator, as claimed claim 1, characterized by [[an]] the electromechanical group equipped with means [[for its]] anchoring on the turbocharger (5) or on the engine. -- (for maintaining the consistency and avoiding double recitation in claims).

15. Claim 15 should be replaced by following:

--The electromechanical actuator, as claimed in claim 14, characterized by flange type means (11) [[for its]] anchoring on the turbocharger (5).-- (for maintaining the consistency in claims).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims **1-15** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically,

1. In claim 1, the terms of ***“electromechanical group”*** and ***“a rod (3) intended to interact with a pivot point of a turbocharger”*** render the claim indefinite, since it is not clear that which “electromechanical group” the applicant wants to referenced to, why a rod has to be intended to interact with a pivot point of the turbocharger, and when the rod is not intended use to interact with or connect to the pivot point of the turbocharger.

2. In claim 1, line 5; claim 3, line 3; claim 8, line 3, ***“pilot point”*** is a meaningless term and should be replaced by -- ***pivot point*** --.

3. In claims 6-7, line 2, the terms of ***“capacitive group”*** and ***“a group that measures the inductance of the solenoid”*** render the claim indefinite, since it is not clear that which group of capacity or capacitance, and which group of measurement applicant want to reference to. Applicant has to clarify or define these groups.

4. In claim 11, the phrase ***“or another equivalent one”*** renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "or the like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1, 3-5, and 6-13 are rejected under 35 U.S.C. 103(a) as best understood as being unpatentable over Suzuki et al. (Patent Number 4,477,875), in view of Stupak, Jr. (Patent Number 4,665,348).***

Suzuki discloses an electromechanical actuator (52) for the regulation of the turbocharger (42) of internal combustion engines, characterized by the combination of:

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a) an electromechanical group comprising a solenoid (62) equipped with a sliding electromagnetic supplied with a rod (54) intended to interact with the pivot point (Not Numbered) of the turbocharger (42) (See Figure 2);

b) an electronic circuit which: - on the way receives at least the signal from the engine's electronic control unit (100) and the retroaction or feedback signal tied to the position of the electromagnetic in the solenoid (62); - on the way out it distributes the electric current connected to the entry signal and with which it feeds the solenoid (62) generating the magnetic field (See Figures 1-2);

wherein the solenoid (62) combined with the electromagnetic with which the rod (54) is connected and through which the pivot point (Not Numbered) is activated(See Figure 2)

wherein the rod (54) tied on one end to the electromagnetic and at the other end equipped with the means for connecting to the pivot point (Not Numbered) of the turbocharger (See Figure 2);

wherein the rod (54) combined with a spring (60) capable of pushing the electromagnetic to its resting position (See Figure 2);

wherein the electronic circuit constituted by one control part (152) and by one power part (64), from which the solenoid (62) is fed (See Figure 2);

wherein an electronic circuit constituted by one part (152) with at least two entries, from which it receives in one, the signal from the engine's electronic control unit (100), of the ECU type or another equivalent one, in the other one, the retroaction or

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feedback signal tied to the position of the electromagnetic in the solenoid (62) (See Figure 2);

wherein the electronic circuit comprising one part (152) from which, the electric current sent to the solenoid (62) is issued and which is linked to the signals applied to its entry (See Figures 1-2, and 10);

wherein an electronic circuit comprising one part (152) constituted at least by a differential amplifier unit (68) which receives on the way in, the signal from the engine's electronic control unit (100) and supplies a current with which the solenoid (62) is guided, through a power amplifier part (64) (See Figures 1-2 and 10, Column 3, lines 38-56 and 64-68, Column 4, lines 1-30, Column 5, lines 49-57, Column 6, lines 64-68, and Column 7, lines 1-2).

However, Suzuki fails to disclose ferromagnetic material; a position sensor for controlling the ferromagnetic in the solenoid; the position sensor being made with a resistor normally of the linear type, with a capacitive group, and with a group that measures the inductance of solenoid.

Stupak, Jr. teaches that it is conventional in the art of sensing and controlling the position of an actuator, to utilize

the ferromagnetic material in the solenoid (See Column 1, lines 25-35; and Column 5, lines 40-52);

a position sensor (26) through which the control of the position of the ferromagnetic material in the solenoid (10) is carried out (See Figure 2a, Column 5, lines 62-68, Column 6, lines 1-12);

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a position sensor (26) made with a resistor, normally of the linear type (See Column 6, lines 7-12), with a capacitive group, and with a group that measures the inductance of solenoid upon the variation of the position of the ferromagnetic nucleus (See Column 6, lines 54-66).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized ferromagnetic material; a position sensor for controlling the ferromagnetic in the solenoid; the position sensor being made with a resistor normally of the linear type, with a capacitive group, and with a group that measures the inductance of solenoid, as taught by Stupak, Jr. to improve the accuracy of controlling the actuator, in the Suzuki device.

***Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Patent Number 4,477,875), in view of Stupak, Jr. (Patent Number 4,665,348); and further in view of Rieck et al (Patent Number 6,700,232 B2), and Detrick et al. (Patent Number 3,763,412).***

The modified Suzuki device discloses the invention as recited above; however, fails to disclose the solenoid coil being made of conducting wire sheathed and/or treated with appropriate insulating material.

Rieck teaches that it is conventional in the solenoid valve art, to utilize a coil (2) made of conducting wire sheathed (See Column 3, lines 5-6).

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Additionally, Detrick teaches that it is conventional in the position device/actuator art, to utilize a coil (2) being treated with appropriate insulating material (See Figure 1, and Column 2, lines 25-32).

it would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the solenoid coil being made of conducting wire sheathed, as taught by Rieck; and the solenoid coil being treated with appropriate insulating material, as taught by Detrick, since the use thereof would have improved the accuracy of controlling the position of the modified Suzuki actuator.

***Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. (Patent Number 4,477,875), in view of Stupak, Jr. (Patent Number 4,665,348); and further in view of Waszkiewicz et al. (Patent Number 6,360,541 B2).***

The modified Suzuki device discloses the invention as recited above; however, fails to disclose flange type means for anchoring the electromechanical group on the turbocharger or on the engine.

Waszkiewicz teaches that it is conventional in the electric actuator art, to utilize flange type means (Not Numbered) for anchoring the electromechanical group (50 and 56) on the turbocharger (18) or on the engine (See Figure 3).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized flange type means for anchoring the electromechanical group on the turbocharger or on the engine, as taught by

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Waszkiewicz, to position/locate/anchor the electromechanical device on the turbocharger of the modified Suzuki turbocharged internal combustion engine.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Voigt et al. (US Patent Number 3,425,009) disclose an electromechanical actuator.

- McClintock (US Patent Number 3,980,908) discloses an exposure control system.

- Okamoto et al. (US Patent Number 4,556,038) disclose a supercharged internal combustion engine having a control means responsive to engine speed and accelerator pedal velocity.

- Jatnieks (US Patent Number 5,519,295) discloses an electrically operated actuator having a capacitor string energy for returning the actuator for a preferred position upon the power failure.

- Pailthorp et al. (US Patent Number 4,656,400) disclose a variable reluctance actuator having improved constant force control and position sensing features.

- Hara (US Patent Number 5,095,234) discloses an electromagnetic solenoid with a coil wound around a coil case and a plunger inserted into the coil to be slidable in the axial direction, wherein a tap impregnated with a thermo-settable resin is wound on the trunk portion of the coil case and the coil is wound on the wound tape.



- Miotke et al. (US Patent Number 5,152,145) disclose a turbocharger waste gate brake and a system therefor.

- Morinigo et al. (US Patent Number 5,309,050) disclose a ferromagnetic wire electromagnetic actuator.

- Satomi et al. (US Patent Number 5,602,431) disclose a linear motor.

- Shida et al. (US Patent Number 5,783,915) disclose a linear actuating apparatus.

- Ishiyama et al. (US Patent Number 5,955,798) disclose a linear motor

- Delson et al. (US Patent Number 6,002,184) disclose an actuator with opposing repulsive magnetic forces.

- Nishiwaki (Patent Number JP 05291030 A) discloses a linear solenoid device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB  
April 29, 2004



Thai-Ba Trieu  
Patent Examiner  
Art Unit 3748